

I Claim:

1. A method for increasing light olefin yield during conversion of oxygenates to olefins comprising:

- 5 (a) contacting an oxygenate feed in a primary reactor with a non-zeolitic molecular sieve catalyst under first conditions effective to produce a first product comprising light olefins;
- 10 (b) separating said first product into said light olefins and a heavy hydrocarbon fraction comprising heavy hydrocarbons;
- (c) feeding said heavy hydrocarbon fraction to a second reactor selected from the group consisting of said primary reactor and a separate auxiliary reactor; and
- 15 (d) subjecting said heavy hydrocarbon fraction in said second reactor to second conditions effective to convert at least a portion of said heavy hydrocarbons to light olefins.

2. A method for increasing light olefin yield during conversion of oxygenates to olefins comprising:

- 20 (a) contacting an oxygenate feed in a primary reactor with a first, non-zeolitic molecular sieve catalyst under first conditions effective to produce a first product comprising light olefins;
- (b) separating said first product into said light olefins and a heavy hydrocarbon fraction comprising heavy hydrocarbons;
- 25 (c) feeding said heavy hydrocarbon fraction to a separate auxiliary reactor; and
- (d) contacting said heavy hydrocarbon fraction with a second molecular sieve catalyst in said separate auxiliary reactor under conditions effective to promote conversion of said heavy

66007 66E4680

12

Sub
acond's

hydrocarbons to light olefins.

3. The method of claim 1 wherein said non-zeolitic molecular sieve catalyst comprises a silicoaluminophosphate.
- 5
4. The method of claim 2 wherein said first, non-zeolitic molecular sieve catalyst comprises a silicoaluminophosphate.
5. The method of claim 1 wherein said non-zeolitic molecular sieve catalyst comprises a silicoaluminophosphate selected from the group consisting of SAPO-44, SAPO-34, SAPO-18, AND SAPO-17.
- 10
6. The method of claim 2 wherein said first, non-zeolitic molecular sieve catalyst comprises a silicoaluminophosphate selected from the group consisting of SAPO-44, SAPO-34, SAPO-18, AND SAPO-17.
- 15
5. The method of claim 2 wherein said second molecular sieve catalyst comprises a zeolite.
- 20
6. The method of claim 4 wherein said second molecular sieve catalyst comprises a zeolite.
7. A method for increasing light olefin yield during conversion of oxygenates to olefins comprising:
- 25
- (a) contacting an oxygenate feed in a primary reactor with a silicoaluminophosphate selected from the group consisting of SAPO-44, SAPO-34, SAPO-18, and SAPO-17, under first conditions effective to produce a first product comprising light olefins;

- (b) separating said first product into said light olefins and a heavy hydrocarbon fraction comprising heavy hydrocarbons;
 - (c) feeding said heavy hydrocarbon fraction to a separate auxiliary reactor; and
 - (d) contacting said heavy hydrocarbon fraction with ZSM-5 in said separate auxiliary reactor under conditions effective to promote conversion of said heavy hydrocarbons to light olefins.
 8. The method of claim 5 wherein said zeolite is ZSM-5.
 9. The method of claim 6 wherein said zeolite is ZSM-5.
 10. The method of claim 1 wherein said non-zeolitic molecular sieve catalyst comprises a microporous framework comprising pores consisting essentially of a diameter in the range of from about 5 to about 10 Angstroms.
 11. The method of claim 2 wherein said first, non-zeolitic molecular sieve catalyst and said second molecular sieve catalyst comprise a microporous framework comprising pores consisting essentially of a diameter in the range of from about 5 to about 10 Angstroms.
 12. The method of claim 1 wherein said non-zeolitic molecular sieve catalyst comprises a microporous framework comprising pores consisting essentially of a diameter less than about 5 Angstroms.
 13. The method of claim 2 wherein said first, non-zeolitic molecular sieve catalyst comprises a microporous framework comprising pores consisting essentially of a diameter less than about 5 Angstroms.
- 97B058

14. The method of claim 3 wherein said non-zeolitic molecular sieve catalyst comprises a microporous framework comprising pores consisting essentially of a diameter less than about 5 Angstroms.
- 5 15. The method of claim 4 wherein said first, non-zeolitic molecular sieve catalyst comprises a microporous framework comprising pores consisting essentially of a diameter less than about 5 Angstroms.
16. The method of claim 1 wherein said heavy hydrocarbon fraction
10 consists essentially of said heavy hydrocarbons.
17. The method of claim 2 wherein said heavy hydrocarbon fraction consists essentially of said heavy hydrocarbons.
- 15 18. The method of claim 3 wherein said heavy hydrocarbon fraction consists essentially of said heavy hydrocarbons.
19. The method of claim 7 wherein said heavy hydrocarbon fraction
20 consists essentially of said heavy hydrocarbons.
20. A method for increasing light olefin yield during conversion of oxygenates to olefins comprising:
- 25 (a) contacting an oxygenate feed in a primary reactor with a non-zeolitic molecular sieve catalyst under conditions effective to produce a product comprising light olefins;
- (b) separating said product into said light olefins and a heavy hydrocarbon fraction comprising heavy hydrocarbons; and
- (c) recycling said heavy hydrocarbon fraction to said primary reactor.